



# Multipurpose forest management: goals and means

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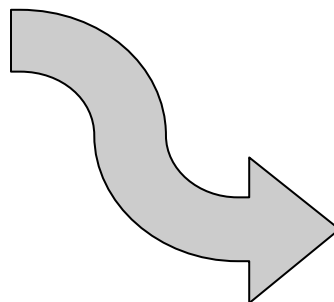
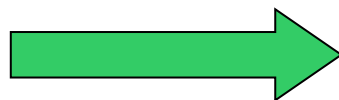
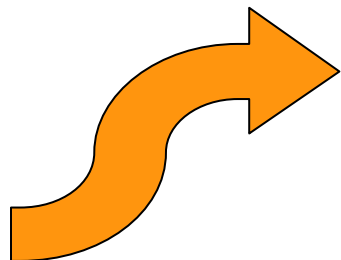
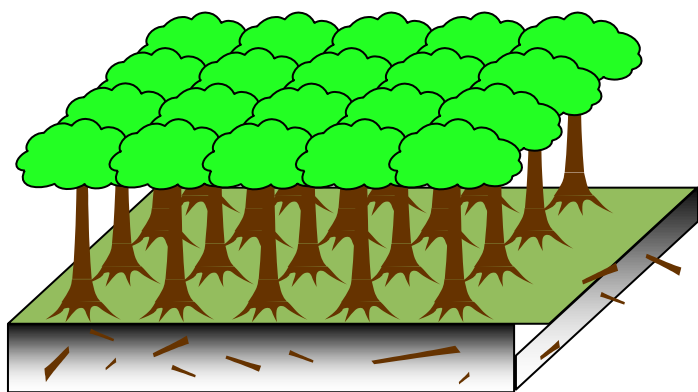
# Multipurpose forest management: goals and means

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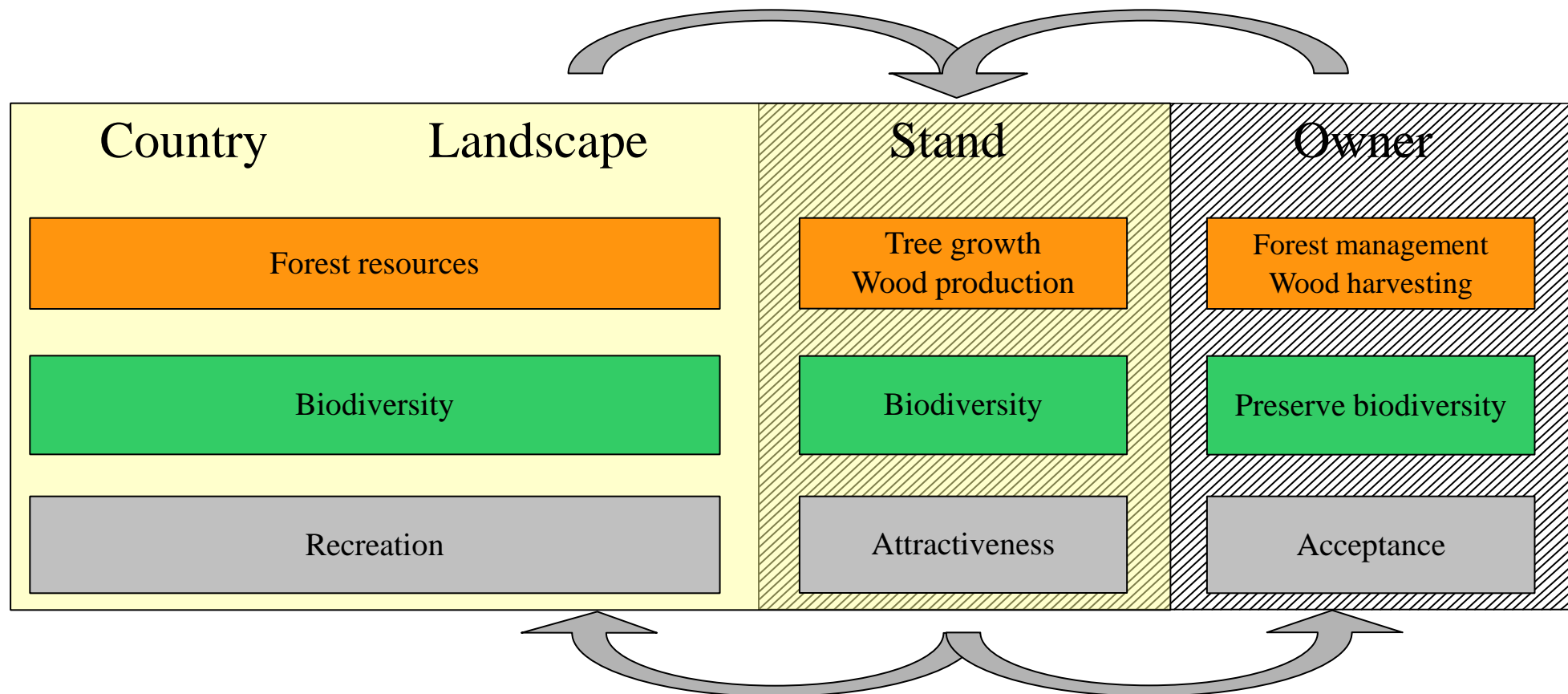
# Multipurpose forest management

- Definition: Joint production of goods and services in one forest stand or at the forest or landscape level





# A multi-scale and multi-actor question

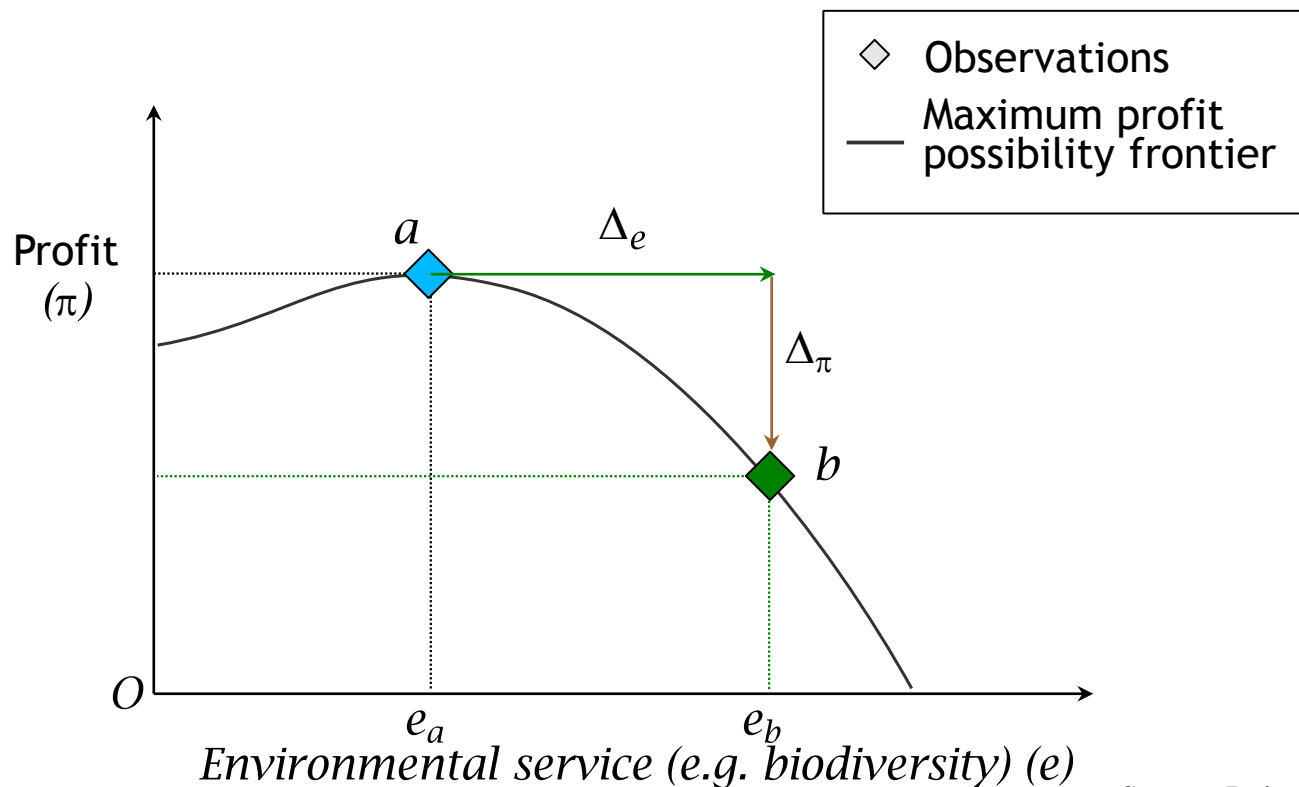


The important question: « Where to put things » Polasky et al. 2008 Bio.Cons.



# Multipurpose forest management

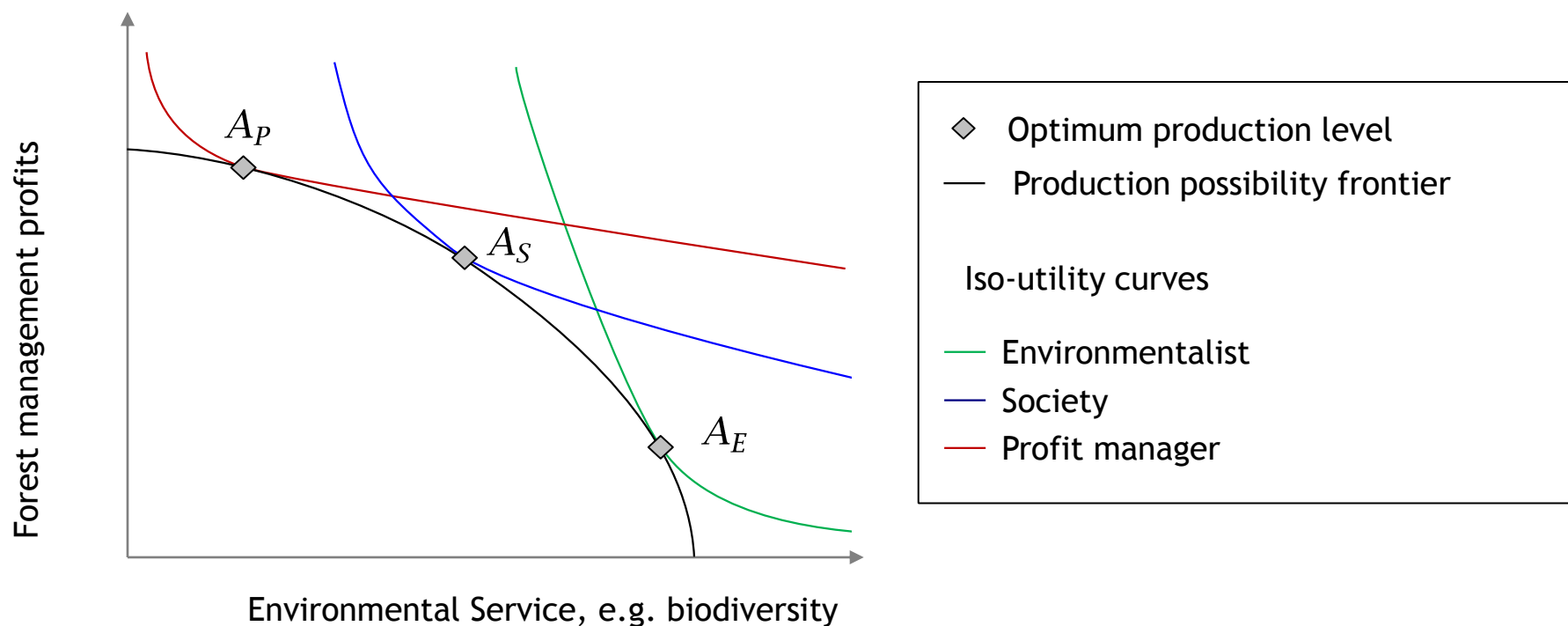
## Production function: substitution



Source: Robert (2012)



# Forest management for private and public goods: a social objective





# Multipurpose forest management

## Economic valuation

- **Example: The economic value of forest recreation in Lorraine**
- **Goal:**
  - Assess the impact of forest management on recreation value
    - What are the preferences for different **forest characteristics**?
    - Where to put the effort on recreation?
- **Method:**
  - Travel cost method (reveal preferences from individuals' choice of forest visits)
  - Observed and hypothetic choices (combining observed behaviour with a choice experiment)
  - Random utility model (recreation site selection model) Bockstael et al (1987 Marine Resource Res.)



# Multipurpose forest management

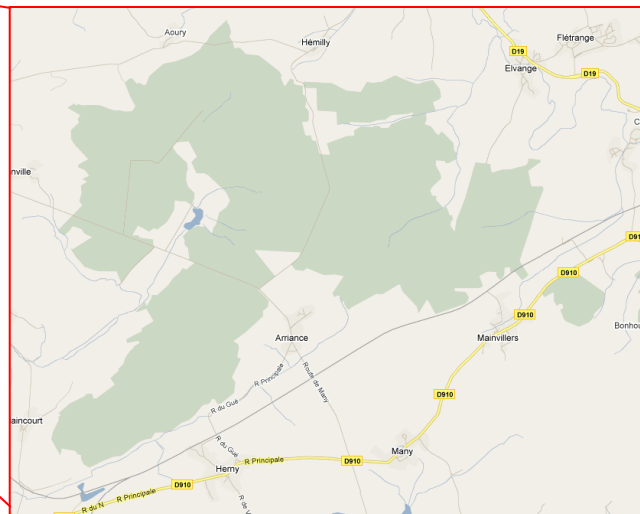
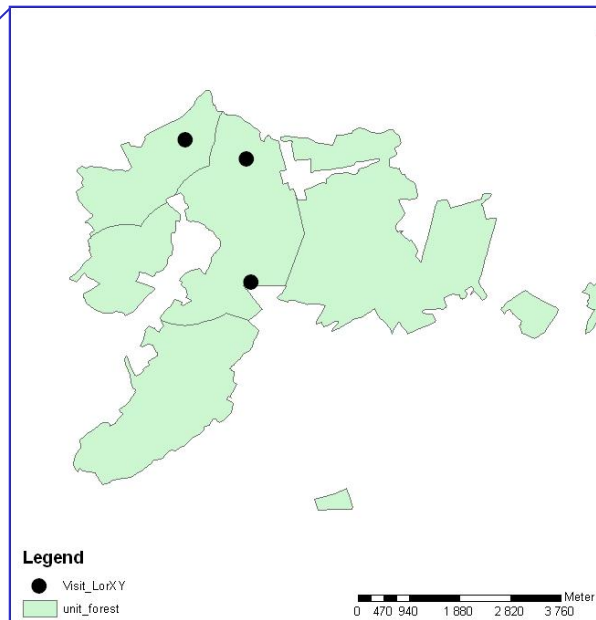
## Economic valuation

- **Example: The economic value of forest recreation in Lorraine**
- Data collection
  - Focus groups
  - Internet survey: 1100 completed questionnaires
    - Information about their use of forest
    - Choice experiment
    - Socio-demographic information
  - Forest characteristics from GIS maps (forest inventory data, topographic maps etc.)
    - Forest structure (tree species, age structure, diversity measures)
    - Ecological and landscape indicators (likelihood of finding blueberries or *Convallaria majalis* , altitude)
    - Recreation facilities (parking, picnic places, trekking roads etc.)
    - Complementary sites (lakes, rivers, historical monuments, etc.)
    - Institutional conditions (nature parks, natura2000, forest ownership)





## How to define forest units relevant for forest recreation?



Google  
Map

Where visited  
forest are  
identified



# Multipurpose forest management

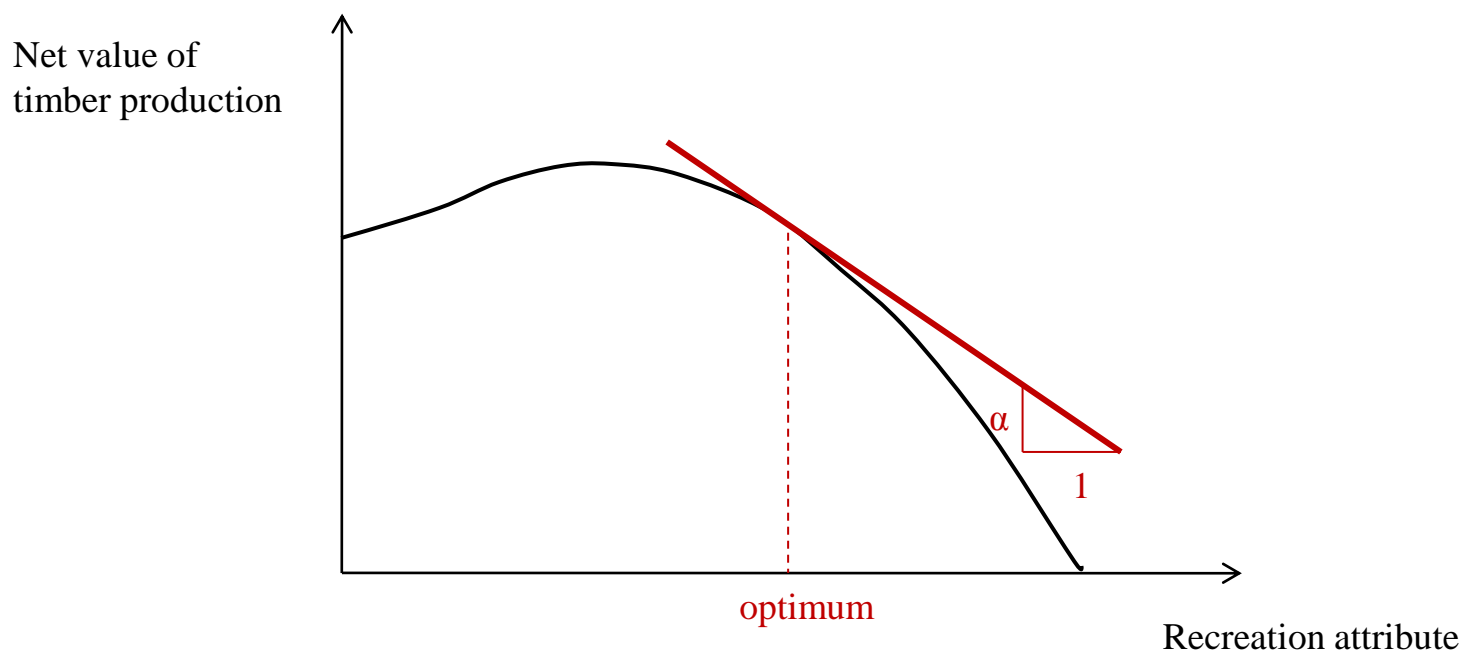
## Economic valuation: preliminary results

Attributes	Levels	Stated choice	Revealed choice
		WTP (unit km)	WTP (unit km)
Dominant tree species	Broadleaf	17,9 ***	18,1 *
	Mixed	22,6 ***	15,9
Trekking paths	One trekking path	11,0 ***	11,9 **
	More trekking paths	19,6 ***	15,4 ***
Facilities	Parking or picnic place	5,7 ***	16,3 ***
	Parking and picnic place	3,7 **	32,5 ***
Water bodies	Lake or river	14,6 ***	13,8 ***
Likelihood of blueberries (%)			0.8 *
Private forest			-40.6 ***
Private and public owned forest			-13.1 ***
Size of forest			0.015 ***
Altitude , standard deviation			0.5 ***
ASC SQ		0,502 ***	
Adj, McFadden R <sup>2</sup>		0,229	0.42
N		1061	526



# Multipurpose forest management

How to decide the mix of joint-produced services?



NB: the production possibility frontier is hypothetical?



# Discussion: Forest science and Economics

- **Joint production in applied research?**
  - Economists can inform forest owners and policy makers with:
    - Trade offs, costs, and benefits assessment of alternative management and policy options
  - This requires:
    - Quantitative ecological information (e.g. production functions, probability distributions)
- ⇒ Increase the value-added of research in forest science
- But also:
    - Economist can contribute to identify policy relevant ecological/biological research questions and design of experiment
    - ⇔ Truly integrated research “production”



# Thanks

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